ASOS MODIFICATION NOTE 52 (for Electronics Technicians)
Engineering Division
W/OSO321:WW/WDW
Revision Data: 09/27/99

SUBJECT	:	Class I Automated Surface Observing System (ASOS) Solid State Time Delay Relay (SSTDR) for the Data Collection Package (DCP)
PURPOSE	:	The addition of an SSTDR is to ensure a proper reset of the Class I DCP ASOS system (*systems without an Uninterruptible Power Supply (UPS)*) during an interruption of power.
EQUIPMENT AFFECTED	:	ASOS Class I DCP
PARTS REQUIRED	:	Modification Kit: S100-077B (Class I DCP)
MOD PROCUREMENT	:	The above Field Modification Kit (FMK) will be initial issued by Washington Central Support and is required for all Class I DCP ASOS sites.
EFFECTIVITY	:	All Class I DCP ASOS sites (systems without a UPS installed).
SPECIAL TOOLS REQUIRED	:	Drill and drill bit, size: 5/32-inch (0.15625) wire caps 14 gauge wire
TIME REQUIRED	:	3 hours per SSTDR
EFFECT ON OTHER INSTRUCTIONS	:	None
AUTHORIZATION	:	This modification is authorized by ECP **E985M05F187C**.
VERIFICATION STATEMENT	:	This modification was tested for operational integrity at the operational test and evaluation (OT&E) sites listed in appendix A.

GENERAL

This modification note provides procedures to install a SSTDR in the Class I ASOS DCP. Class I systems are those that do *not* have a UPS installed. When an interruption or loss of power occurs, the SSTDR delays the activation of the Class I system for 3 seconds. This ensures a proper reset of the ASOS's radio frequency modem(s), pressure sensors, and power supplies.

PROCEDURE

The following instructions are for the installation of the SSTDR in the Class I DCP. Perform the following steps for all DCPs at each site. If installing in conjunction with Modification Note 47, complete steps 1 and 2 under the DCP SSTDR assembly prewiring instructions and steps 3 through 8 under the installation of the DCP SSTDR.

DCP SSTDR (2A1A9) Assembly PreWiring Instructions

Note:
Prewiring each SSTDR/UPSBC assembly before the module is installed in the DCP will simplify this modification and possibly reduce installation time.

1. Ensure the FMK has all the parts listed in appendix B.

2. Clip the SSTDR bracket onto the Din Rail and attach the SSTDR to this bracket using the #1 phillips machine screw.

3. Connect the following four wires to the SSTDR:
   a. Connect wire A9K1-1/A1A4-1B to K1-1.
   b. Connect wire A9K1-2/A1A4-1C to K1-2.
   c. Connect wire A9K1-3/A1A4-9C to K1-3.
   d. Connect wire A9K1-4/A1A4-12A to K1-4.

BEFORE INSTALLATION OF THE SSTDR INTO THE DCP

1. Contact the AOMC at 1-800-242-8194 and provide notification on which ASOS will have the SSTDR(s) installed.

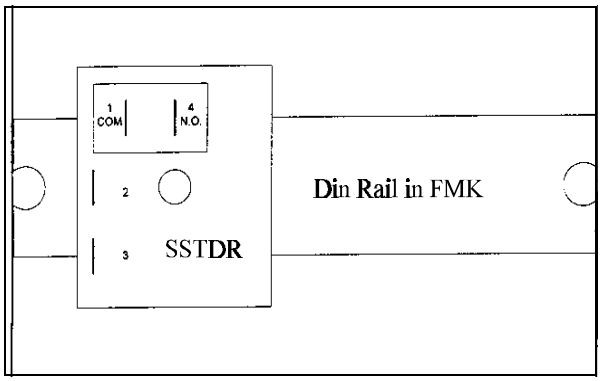

Figure 1 SSTDR on the Din Rail

2. Get approval of the responsible MIC/OIC/Observer before starting installation. The SSTDR may be installed on any day of the month if restrictions in steps 3 and 4 are satisfied.

3. **Commissioned sites only:** Do not start installation during inclement weather, precipitation, instrument flight rule conditions, or if any of those conditions are expected within 3 hours. The responsible MIC/OIC/Observer will define those meteorological conditions.

4. Do not start the SSTDR installation at a time that will conflict with scheduled synoptic observations at 00, 03, 06, 09, 12, 15, 18, and 21Z. Although 2 hours ***per*** SSTDR should be sufficient, allow 3 hours ***per*** SSTDR to complete installation and restart the ASOS.

5. Immediately before beginning work at National Weather Service (NWS)-staffed sites, the MIC/OIC/Observer will inform the air traffic control tower (ATCT) and any other critical users the ASOS will be shut off for SSTDR(s) installation (for unstaffed sites, the electronics technician will inform the ATCT).

6. Do not begin the installation process until immediately after an hourly observation has been transmitted. At NWS-staffed sites, normal back-up observing procedures will be implemented.

7. Make the appropriate SYSLOG entries, (MAINT-ACT-FMK) Mod 52.
   a. Log on as **TECH**.
   b. Key the **MAINT** screen.
   c. Key the **ACT** page.
   d. Key **START** - Stop here and perform "INSTALLATION OF THE DCP SSTDR."
   e. Verify maintenance start entry in SYSLOG.

INSTALLATION OF THE SSTDR INTO THE DCP

A. Class I DCP SSTDR:

WARNING

Ensure the AC power is completely removed from the DCP. Death or severe injury may result if power is not completely removed from the DCP prior to installing the SSTDR.

1. Open the DCP enclosure door and remove power from the 2A1A3A1 circuit breaker by placing the switch into the **OFF** position.

2. At the AC junction box, open and remove power to the DCP by placing the DCP circuit breaker into the **OFF** position.

3. Unfasten the screw at the top of the circuit breaker rack and lower the assembly.

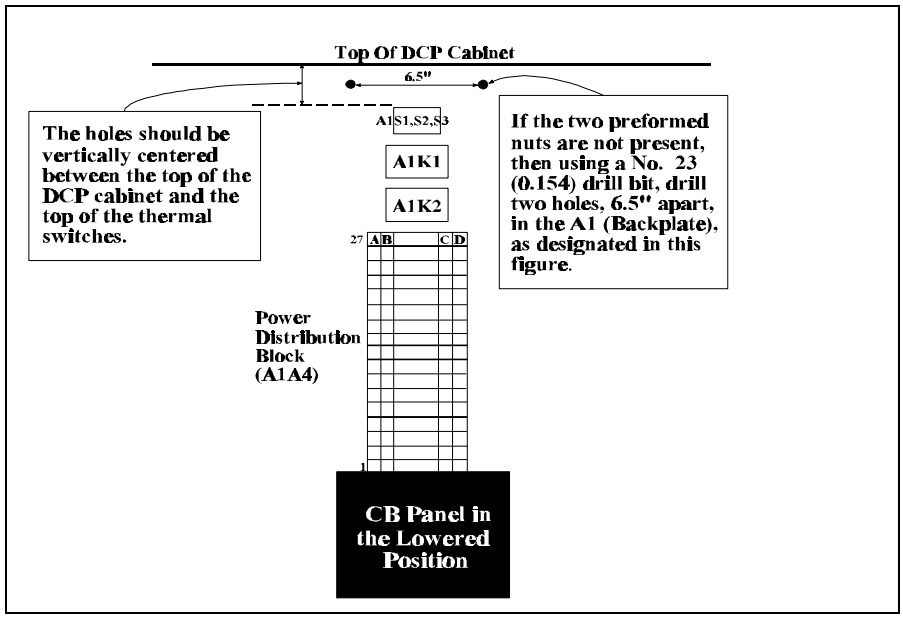

Figure 2 DCP SSTDR Mounting Location within DCP Cabinet

CAUTION:

Once the circuit breaker rack has been lowered, be advised that there are two Solid State Relays above the PDB, *K1* and *K2*, and are to be ignored while performing this modification. Their location is 2A1K1 and 2A1K2. The K1 assembly for this modification will be located at 2A1A9-K1.

4. Above the thermal switches (2A1S1,S2,S3), there may be two preformed nuts in the A1 backplate. If so, proceed to step 6, if not, proceed with the next step (Refer to figure 2).

Note:

If drilling the holes is necessary, cover DCP electrical components to prevent shorts from the metal shavings.

5. Using a drill bit (5/32-inch) and the Din Rail as a template, drill two holes in the A1 back plate, as designated in figure 2, to install the 2A1A9 assembly.

6. Install the DCP SSTDR assembly, 2A1A9, behind the circuit breaker rack and above the Power Distribution Block (PDB), 2A1A4, as shown in figure 2. *If the preformed nuts are installed,* use the two machine screws, flat washers, and lock washers. *If the holes needed to be drilled,* use the two self-tapping screws, flat washers, and lock washers.

7. On the DCP PDB, 2A1A4, remove and cap wires (GRY 14) 2A1A4-1B and 2A1A4-12A.

8. Connect the following wires between the PDB, 2A1A4, and DCP SSTDR: (Use figure 3 as a reference).

Note:

When making connections to the PDB, ensure the wires are not inserted too far into their terminals. If this occurs and the terminal screw is tightened down, the wire insulation may prevent the contact from taking place.

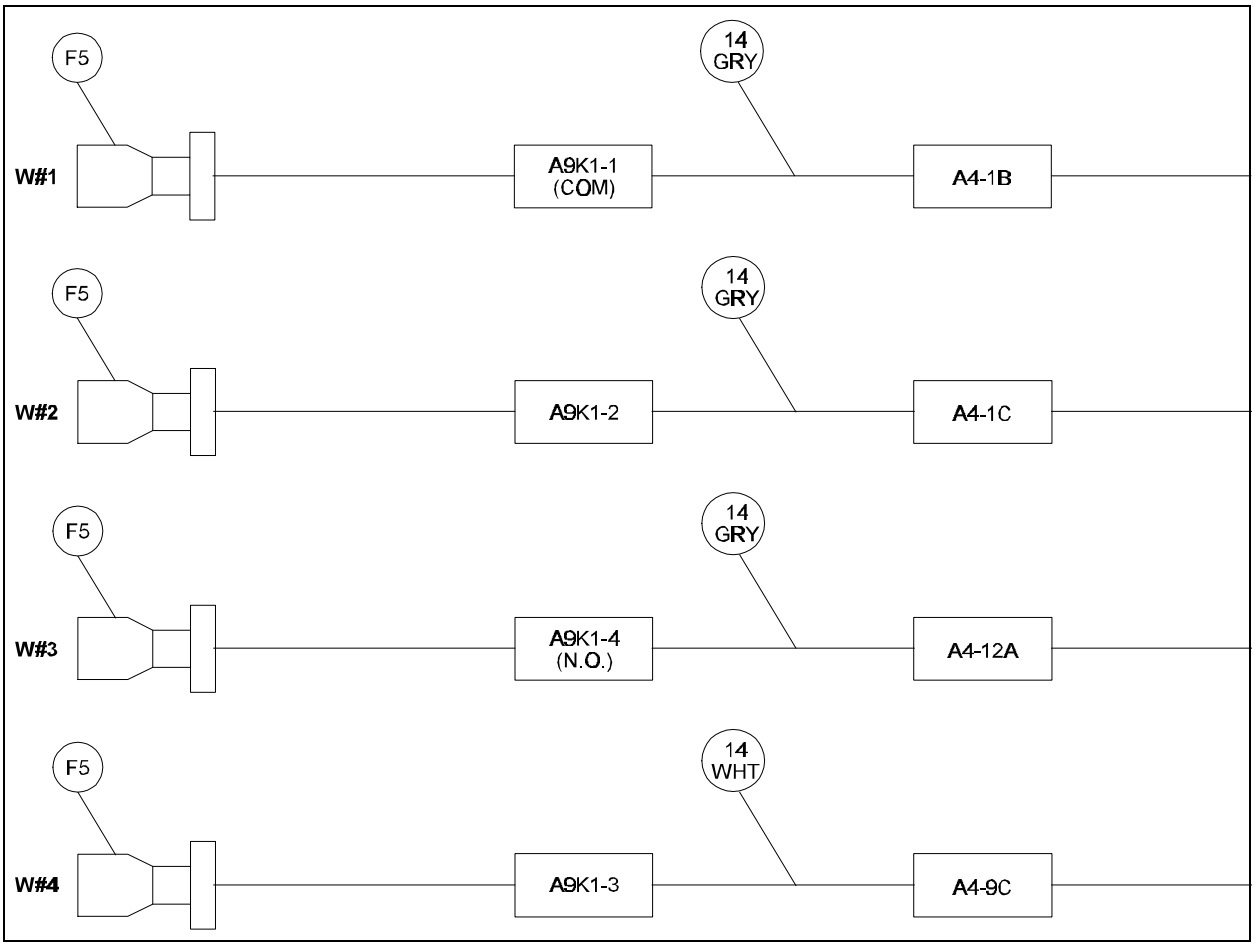

Figure 3 General Wiring Diagram on FMK Din Rail

Note:

Check each connection made to the PDB by giving a slight tug on each wire.

a. Connect wire A1A4-1B/A1A9K1-1 to A4-1B.
b. Connect wire A1A4-1C/A1A9K1-2 to A4-1C.
c. Connect wire A1A4-9C/A1A9K1-3 to A4-9C.
d. Connect wire A1A4-12A/A1A49K1-4 to A4-12A.

Note:

When power is reapplied to the DCP, there will be approximately a 3-second delay until the DCP begins to run.

9. At the AC junction box, open and reinstate power to the DCP by placing the DCP circuit breaker into the **ON** position.

10. Inside the DCP, reinstate power from the 2A1A3A1 circuit breaker by placing the switch into the **ON** position.

11. When all DCPs are completed, proceed to "Verification Procedure for the DCP SSTDR."

VERIFICATION PROCEDURE FOR THE DCP SSTDR

1. Return to the OID and log on as **TECH**.

2. Proceed to the 12-Hour page (**REVUE**-**SENSOR**-**12-HR**) and ensure the data is being collected from the sensors. Then key **EXIT**.

3. Proceed to the maintenance pages (**MAINT)** and clear all failures for the ACU and DCP caused by powering the system down.

4. When complete, key **EXIT**.

5. Proceed to "AFTER INSTALLATION OF THE DCP SSTDR."

AFTER INSTALLATION OF THE DCP SSTDR

1. Call the AOMC at 1-800-242-8194 and inform the operator of:
   a. Your location.
   b. The installation of the SSTDR has been completed.

2. Enter in the SYSLOG that maintenance has been completed.
   a. Key the **MAINT** screen.
   b. Key the **ACT** page.
   c. Key **FMK** - Enter the Field Mod Kit (FMK) number as follows: **Mod 52**. Press **ENTER**. On the second line of the screen, verify that only Mod 52 is displayed. Complete by entering **Y** in the [Y/N] area if only Mod 52 is displayed. If other modifications are completed, make appropriate log entry.
   d. Check the SYSLOG and verify the FMK message. Enter a comment in the SYSLOG stating the SSTDR has been installed.

REPORTING MODIFICATION

Target date for completion of this modification is 30 days for commissioned sites and 45 days for non-commissioned sites, after the receipt of parts. Report completed modification on a National Weather Service Form A-26, Maintenance Record, appendix B, using the instructions in Engineering Handbook No. 4 (EHB-4), Engineering Management Reporting System (EMRS), part 2, appendix F. Report the modification to the DCP using the equipment code **ADCP** in block 7. Record a modification number of **52** in Block_17a of the A-26. A sample WS Form A-26, Maintenance Record, has been included in appendix B.

Original Signed

John McNulty
Chief, Engineering Division

Appendix A - Test Sites
Appendix B - Parts List
Appendix C - A-26

W/OSO321:B.Whisel:713-1833x156:updated:9/22/99
File:K:\OSO32\OSO321\ASOS Temps\Mod52.wpd
spellchecked:9/22/99:src

The OT&E sites for the Solid State Time Delay Relay are:

SID	CITY	STATE	Class of System (Class I or II)	Solid State Time Delay Relay (Qty)
DUG	Douglas Bisbee	AZ	Class I	1
THV	Thomasville	PA	Class I	1

S100-FMK077B DCP Solid-State Time Delay Relay	
Quantity	**Nomenclature**
1	Insulated quick disconnect female crimp-on terminal on a gray wire labeled A9K1-1 (COM)
1	Insulated quick disconnect female crimp-on terminal on a gray wire labeled A9K1-4 (N.O.)
1	Insulated quick disconnect female crimp-on terminal on a gray wire labeled A9K1-2
1	Insulated quick disconnect female crimp-on terminal on a white wire labeled A9K1-3
12	3-1/2" long wire tie wrap
1	Solid State Time Delay Relay (SSTDR)
1	SSTDR bracket
1	8-32 x 1-1/4" pan head #1 phillips machine screw
1	Din rail
2	3/8"OD x 3/16"ID Flatwasher
2	No. 8 Machine Screw, 1/2" long
2	No. 8 Lockwasher

A-26 (EMRS)